EE/Kickoff Meeting RTMA v2.8

August 1st, 2019

RTMA/URMA Version 2.8
Status as of 06/20/19

Project Information & Highlights

Leads: J. Carley (EMC), S. Levine (EMC), S. Earle (NCO)

Scope: Re-tune sky cover analysis, enforce consistency with ceiling, update sky QC. Expand ob selection algorithm and new T static **B** to OCONUS. Improve 10m wind operator and possibly add lapse rate adjustment for 2m T. Add H_s analysis to Great Lakes + Guam. NOHRSC snow to URMA. PR to 1.25 km. Downscaling enhancements. Bug fixes.

Expected benefits: Improved analyses and support for NBM.

Dependencies: Satisfactory external evaluation. ObsProc.

Schedule

Milestones & Deliverables	Date	Status
Freeze system code	08/15/2019	On track
Complete full retrospective/real time runs and evaluation	10/1/2019	On track
Deliver final system code to NCO and conduct CCB	10/23/2019	On track
Issue Service Change Notice	10/31/2019	Planned
Begin 30-day evaluation and IT testing	Q1FY20	Planned
Operational Implementation	Q2FY20	Planned

EMC | NCO | Red text indicates change from previous quarter

Issues/Risks/Concerns

Issue: Schedule uncertainty with moratorium. **Mitigation**: Adjust schedules as best possible.

Issue 1: NOHRSC only recently considered snow analysis to be ops ready. **Mitigation**: Devs working with NCO & NOHRSC to get data feed established ASAP.

Resources

Staff: **1 Fed + 5.35 Contract**

Funding Source: STI, FAA, JTTI

Compute: parallels: 100 nodes for 3 months (devhigh/devmax). **EMC Dev**: 100 nodes (devhigh); **Ops**: No change for RTMA/URMA/RU-RTMA.
Archive: 26 GB per combined RTMA/URMA cycle (all domains, no change). 1.33 GB per RU-RTMA cycle or 5.3 GB per hour (no-change);

R Management Attention Required | Y Potential Management Attention Needed | G On Target

Upstream Changes

- Smartinits (NAM/RAP/HRRR/HIRESW)
  - Changes/new fields needed for wind adjustment (more later)
- Minimal obsproc changes
- New fixed files (wind metadata, ascii format)
- High-resolution wave background file (temp space only, additional 25 GB/day)
- Discontinue the production of Stage II analysis in PCPANL
- NOHRSC snow analysis

Downstream Dependencies

- MDL/National Blend of Models
  - They know this is coming, will help us display/evaluate
  - We will point them at our output as soon as it is ready
  - URMA Science changes make this upgrade a high priority for them

Science Changes and IT Impacts

- Similarity Theory/Boundary layer scheme for winds
  - New fixed files, new fields from smartinit necessary taking more space
- Expand wave height analysis to Great Lakes (CONUS) and Guam
  - Minimal size increases
- New variable in RTMA-RU: Sky Cover
  - File size increases, still meet the requirement of 15-minute product latency
- Finer grid in PR (only)
  - 2.5 km -> 1.25 km

Few/no additional nodes, extra ~100 GB/day (~15%) in disc & archive space

SmartInit Changes

- HRRR and RAP Smartinit codes were consolidated and reorganized.
- Updated Puerto Rico grid from 2.5 km to 1.25 km in the RAP and NAM Smartinits.
- New WMO header files for Puerto Rico.
- New fields added to all Smartinit grids (NAM, RAP, HIRESW Guam ARW & NMMB, & HRRR) for Similarity Theory/Boundary layer scheme for winds and lapse-rate adjustment for 2-m temperature.
  - skin temperature, surface roughness, lapse-rate
  - pressure, temperature, mixing ratio, u, v, height at model level 1
  - pressure, temperature, and mixing ratio at model level 2

Precipitation Changes

- Add NOHRSC 6h/24h snowfall analyses to pcpURMA
- Introduce a smoother offshore filling of pcpURMA (blending at CMORPH/MRMS and MRMS/Stage IV boundaries)
- Use radar-estimated MRMS QPE in lieu of early Stage II/Stage IV for pcpRTMA; discontinue Stage II production (erly/mid/late runs for ST2ml, ST2gg, ST2rd, ST2un)
- Stage IV analysis changing from GRIB1 to GRIB2
- Discontinue use of “specialty” wgrib2/wgrib2 library (API dependence in source code)
- Add an additional run at 18Z cycle for 24h Stage IV accumulation (30h after valid time, to supplement the current 1/2/3/5/7-day re-run schedule, for water.weather.gov)

Resource Changes

- Minimal node use changes
- Minor (>10%, ~100 GB/day) increase in disc space
  - New variable (sky cover) for RTMA-RU increased from ~180 GB/day to ~220 GB/day
  - HRRR Smartinit has increased from ~13 GB/day to ~26 GB/day
  - RAP Smartinit has increased from ~7 GB/day to ~10 GB/day
  - HIRESW Guam Smartinit has increased from ~250 MB/day to ~280 MB/day
  - NAM Smartinit has increased from ~8 GB/day to ~14 GB/day (00-12 hours, can’t confirm increase for hours 13-60/84)
  - PR RTMA/URMA increased from ~15GB/day to ~30GB/day
  - WW3 background has increased from ~25 GB/day to ~50GB/day (temp space only)

Bugzillas/Miscellaneous (RTMA bug numbers)

- 830: Change gempak subdirectory in com space from nawips to gempak
  - Under ${run}.${PDY}, already fixed in our parallel
- 837: Check for proper data in glsea-temps file in obsproc_prep for URMA
  - Obsproc bugzilla - dates from shutdown, file was updating but did not contain any new data
- 367: Reduce use of goto's in GSI
- Update to use BUFRlib v11.3 (currently v11.2)
- Additional fields on satellite broadcast?
- Google Drive folder for other docs